UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

REGION VII
901 NORTH 5TH STREET
KANSAS CITY, KANSAS 66101

07PY04
Riverfront Site
MOD981720246
2.0
OU4
SRC 2.22.07

ACTION MEMORANDUM

SUBJECT: Request for Removal Action (Source Control) at the Riverfront Site, Maiden Lane Area, Operable Unit 4, New Haven, Franklin County, Missouri

FROM: Kevin Larson, On-Scene Coordinator
Enforcement/Fund-Lead Removal Branch
Superfund Division

THRU: Kenneth S. Buchholz, Chief
Enforcement/Fund-Lead Removal Branch

TO: Cecilia Tapia, Director
Superfund Division

SITE ID#:	07PY04
CERCLIS ID#:	MOD981720246
NATIONALLY SIGNIFICANT:	No
CATEGORY OF REMOVAL:	Time-critical

I. Purpose

The purpose of this Action Memorandum is to request funding and document approval of the proposed removal action (source control) for the Maiden Lane area of Operable Unit 4 (OU4) portion of the Riverfront Superfund site (Site) located in New Haven, Missouri (Figure 1). The general objectives of the action are as follows: (1) to minimize the migration of volatile organic compounds (VOCs) from VOC-impacted soils into underlying groundwater at the Site to the maximum extent practicable, and (2) to contain/treat perched water above and within the upper part of the weathered bedrock.

II. Site Conditions and Background

A. Site Description

1. Removal Evaluation

In 1986, the VOC tetrachloroethene (PCE) was detected in two public-supply wells (W1 and W2) in the northern part of the city of New Haven (Figure 2). Following

the discovery of contamination, two new public-supply wells (W3 and W4) were installed in the southern part of the city (Figure 2). Several investigations of potential sources of the contamination were made by the Missouri Department of Natural Resources (MDNR) and the Environmental Protection Agency (EPA) beginning in the late 1980s and continuing until recently.

The initial investigations of PCE contamination of the public-supply wells began with a Preliminary Assessment conducted by MDNR in 1987 and included an Expanded Site Investigation (ESI) conducted by EPA in 1994. The ESI concluded that PCE was released at a former manufacturing facility in downtown New Haven, but was inconclusive about other PCE sources because of the small amount of data on the groundwater flow in the area. In 1998, EPA tasked the U.S. Geological Survey (USGS) for technical assistance in determining the geohydrology of the New Haven area and to provide information on the possible directions of groundwater flow and directions of PCE migration from potential sources identified in the ESI.

USGS's technical assistance was performed as an ESI/Remedial Investigation (RI) that was completed in July 2000. As a result of the additional data collected during the ESI/RI, EPA proposed the Site for inclusion on the National Priorities List (NPL), 40 C.F.R. Part 300, Appendix B, Table 1, on July 27, 2000. The Site was officially placed on the NPL on December 1, 2000.

The Site involves six OUs in the city of New Haven, Missouri (Figure 2). The OUs were designated by EPA on the basis of results of previous investigations by MDNR, EPA, and USGS. Investigations at each OU were or are being conducted independently on the basis of the degree of prior information on waste generation or disposal practices and the magnitude of PCE contamination from existing environmental data.

OU4 was designated as an OU in 2000 after PCE was detected in a bedrock monitoring well (BW-02) upgradient (south) of the contaminated public well W2 (Figure 3). There were no known industrial activities or suspected PCE disposal areas in the Maiden Lane area or within the entire OU4 area, and the detection of PCE in well BW-02 was not expected.

To further investigate the presence of PCE in groundwater at OU4, a total of nine monitoring wells were installed in the shallow bedrock and overburden in the Maiden Lane area. The first of the monitoring wells was installed in 2003 as part of the general OU4 RI following the detection of PCE contamination upgradient to the contaminated public well W2.

PCE concentrations as high as 9,100 micrograms per liter (µg/L) have been detected in bedrock monitoring wells at the Maiden Lane area. The highest levels of contamination are within or immediately beneath the upper sandstone bed and about 130 to 160 feet beneath ground surface (bgs).

In addition to the groundwater monitoring, soil sampling detected PCE in all 11 soil borings collected in the Maiden Lane area (Figure 4). In general, PCE concentrations increased with depth with the highest concentrations detected in samples below eight feet deep. The highest PCE concentration detected in a laboratory sample was 6,100,000 micrograms per

kilograms (µg/kg) collected at 17.2 to 18 bgs. Concentrations greater than 500,000 µg/kg were detected in borings on adjacent properties south and southwest of the garage located at 104 Maiden Lane. Additional properties are shown on Figure 4.

Soil borings collected near an old garage located at 104 Maiden Lane confirmed substantial levels of PCE. A nonaqueous phase liquid was encountered at 10.7 feet bgs in at least one boring (ML204) southwest and down slope of the old garage with PCE concentrations in this boring detected at levels in excess of 500,000 µg/kg. Contaminated soils were defined as those containing more than EPA Region 9's preliminary remediation goal (PRG) of 480 µg/kg for PCE. Of the 103 samples analyzed from soil borings in this area, PCE was detected in 102 samples with 55 samples above the 480 µg/kg residential soil PRG. Generally, PCE concentrations increased with depth.

The footprint of soil contaminated with PCE in this area was estimated at 3,800 to 5,700 $ft.^2$ depending upon the soil sample depth. The largest extent of contamination is at the 12 to 16 ft. bgs interval. .Contamination extends through the soil into the residuum and into the top of the weathered bedrock estimated at 11 to 18 ft. bgs. The calculated total volume of contaminated soil/residuum is approximately 2,500 yd^3.

2. Physical Location

The city of New Haven (population 1,867) is located along the southern bank of the Missouri River in Franklin County about 40 miles west of St. Louis, Missouri (Figure 1). The principal road in the city is State Highway 100, which runs along an east-west trending ridge about one mile south of the Missouri River. The ridge forms a topographic divide between the Missouri River valley to the north and Boeuf Creek valley to the south. An industrial park developed in the mid-1970s containing several manufacturing and warehousing facilities is located south of this ridge and State Highway 100. Land use north of the highway including the downtown area is mostly residential, and land use outside the city is mostly pasture with some row crops.

3. Release or Threatened Release into the Environment of Hazardous Substance, or Pollutant, or Contaminant

PCE (also referred to as tetrachloroethylene) and its degradation by-products (trichloroethlyene, cis1,2-dichloroethylene, and vinyl chloride) have been detected in groundwater and soils within the Maiden Lane area. These compounds are listed as hazardous substances pursuant at 40 C.F.R. § 302.4. As such, they are each a hazardous substance as defined in Section 101(14) of the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), 42 U.S.C. § 9601(14).

4. NPL Status

The final listing of the Site on the NPL occurred on December 1, 2000 (65 Fed. Reg. 75179).

5. Maps, Pictures, and other Graphic Representations

- Attachment 1 – Location of New Haven, Missouri
- Attachment 2 – Location of Contaminated Public Wells
- Attachment 3 – Location of Monitoring Wells in New Haven, Missouri
- Attachment 4 – Location of PCE Detections in Groundwater at Maiden Lane area
- Attachment 5 – Location of PCE Detections in Soils at the Maiden Lane area.

B. Other Actions to Date

1. Previous Actions

Previous actions at OU4 are described in II.A.1

2. Current Actions

A RI/Feasibility Study (FS) is ongoing at the Maiden Lane area of OU4.

C. State and Local Authorities' Roles

1. State and Local Actions to Date

State actions at the Site have included the review of documents and reports related to this Site and attendance and participation at public meetings.

2. Potential for Continued State/Local Response

MDNR is expected to continue to be involved in the monitoring and review of Site activities.

D. Community Involvement Activities

EPA has contracted with The Perspectives Groups to meet with city officials and local residents in assisting them in understanding the range of issues concerning the Site and to facilitate meetings with federal, state, and local officials as well as affected residents. Also, EPA and MDNR personnel have routinely participated in meetings, provided updates on sampling activities, results of investigations, and information regarding other relevant topics. There is also a Site community advisory group established within the community.

III. THREATS TO PUBLIC HEALTH, OR WELFARE, OR THE ENVIRONMENT AND STATUTORY AND REGULATORY AUTHORITIES

EPA has determined, in accordance with Section 104(a)(1) of CERCLA and based upon the following factors set forth in the National Contingency Plan (NCP) at 40 C.F.R. § 300.415(b)(2) of the NCP, that there is a threat to the public health or welfare or the environment as a result of the release or substantial threat of the release into the environment of hazardous substances at the Site.

- *300.415(b)(2)(i) - Actual or potential exposure to nearby human populations, animals, or food chain from hazardous substances, pollutants, or contaminants.*

  PCE concentrations as high as 9,100 µg/L have been detected in bedrock monitoring wells within the Maiden Lane area. The highest levels of contamination are within or immediately beneath the upper sandstone bed and about 130 to 160 feet bgs. Data indicate that the PCE in the upper sandstone bed is being conveyed to the 210 tributary about 1,500 feet northeast of the Maiden Lane area and Bates Spring about 1,800 feet north. Both the tributary and the spring are located in residential areas of New Haven where residents, visitors, or workers could potentially come in contact with the contamination. In addition, monitoring well data indicate that PCE is present in the weathered bedrock below the upper sandstone bed with the levels as high as 2,000 µg/L. A comparison of water levels in a line of monitoring wells in the Maiden Lane area indicates a strong horizontal gradient moving northeast toward the Missouri River. Consequently, it is believed that the Maiden Lane area is the source of a PCE plume continuing to migrate along the bedrock north to the Missouri River and that this plume contributed to the closure of Public Wells W1 and W2. Levels of PCE detected in W1 ranged from 3.6 µg/L to 21 µg/L, and W2 ranged from 26 µg/L to 77 µg/L.

- *40 C.F.R. § 300.415(b)(2)(iv) - High levels of hazardous substances exist in soils largely at or near the surface that may migrate.*

  PCE was detected in all 11 soil borings collected by EPA at the Maiden Lane area. The highest concentrations (greater than 500,000 µg/kg were in borings on adjacent properties south and southwest of the garage located at 104 Maiden Lane. PCE concentrations increased with depth with the highest concentration detected in samples below eight feet bgs. The highest PCE concentration detected in a laboratory sample was 6,100,000 µg/kg collected at 17.2 to 18 feet bgs. Sampling conducted by EPA confirms that a plume of PCE is continuing to migrate along the bedrock north to the Missouri River.

- *40 C.F.R. § 300.415(b)(2)(v) - Weather conditions exist that may cause hazardous substances to migrate or be released.*

  Precipitation events and storm water runoff are expected to contribute to future releases at the Maiden Lane area. This is due to the effects of the additional hydraulic head that may be formed at the affected areas after rainfall events or storm water runoff, exacerbating the effect of contaminant migration or transport.

- *300.415(b)(2)(vii) – The availability of other appropriate federal or state response mechanism to respond to the release.*

  Because the Maiden Lane area of OU4 is part of a NPL site, EPA is the lead agency in directing the response. There are no other federal, state, or local mechanisms available to address this release. EPA will continue to work with MDNR and other relevant agencies in the implementation of this removal action.

IV. ENDANGERMENT DETERMINATION

Actual or threatened releases of hazardous substances from the Site, if not addressed by implementing the response actions selected in this Action Memorandum, may present an imminent and substantial endangerment to public health, or welfare, or the environment.

V. PROPOSED ACTIONS AND ESTIMATED COSTS

A. Proposed Actions

1. Proposed Action Description

This removal action involves the injection of a chemical oxidant at several locations (up to 127) at the Maiden Lane area within approximately a 3,600 square-foot area downgradient of the source area. The oxidant will be injected using pressurized direct push technologies. Groundwater monitoring will be performed to determine if a second injection of chemicals is needed to reduce the amount of PCE in the shallow aquifer. The actual injection locations will be determined by the EPA during development of the removal action work plan.

2. Post-Removal Site Controls

No Site security is needed as the oxidant is directly injected into the shallow aquifer and once it is injected, the boring is abandoned according to MDNR's regulations. Groundwater monitoring will be conducted at monitoring wells installed at the Maiden Lane area. There are no long-term monitoring or site controls included as part of this time-critical removal action. However, long-term monitoring may be included as part of any remedial action implemented after the conclusion of the RI/FS.

3. Contribution to Remedial Performance

After the completion of the proposed removal activities, no remedial action is anticipated at any of the residential locations. However, a final evaluation of the oxidant injections performance will dictate further remedial actions.

4. Applicable or Relevant and Appropriate Requirements (ARARs)

Federal

The following table summarizes federal ARARs identified for this action:

Action/Prerequisite	Requirement	Citation
Hazardous waste determination	Definition and identification of hazardous waste	40 C.F.R. § 261.20-33
Provide for protection of underground sources of drinking water	Underground Injection Control (UIC) Regulations	40 C.F.R. Parts 144-147
Health and safety standards for on-site workers	Occupational Safety and Health	29 C.F.R. Part 1910 and Section 1926.20 - 1926.26

State

Per EPA's request, the state of Missouri has identified the following ARARs for this action:

Action/Prerequisite	Requirement	Citation
Off-site hazardous waste treatment, storage, or disposal	Land Disposal Restrictions	10 C.S.R. 25-7.268
Waste characterization	Hazardous Waste Determination	10 C.S.R. 25-4.261
Hazardous Waste Regulatory Program	Missouri Waste Management Law	R.S.Mo., Section 260.350 through 260.430
Monitoring wells installed per state requirements	Monitoring Well Construction Code	10 C.S.R. 23-4.010
Provides stringent well requirements for domestic wells and heat pump well construction	Special Area 3 Well Advisory	10 C.S.R. 23-3.100(7)
Site-specific geological analysis that impact human health must be regulated	Missouri Board of Geological Registration/Regulations	4 C.S.R. 145-1.010

5. Project Schedule

Planning for this removal action may commence immediately following the approval of this Action Memorandum. A removal action work plan will be developed by EPA through a contractor and should take approximately one month. Development of a bid document and other necessary subcontracting documents needed to acquire the services of a subcontractor is anticipated to take an additional month. Injection of the chemical oxidant with the installation of additional monitoring points is anticipated to last approximately six weeks. This removal action will be conducted as a fund-lead removal with EPA as the lead agency. Monitoring of the effects of the first injection will be conducted at two weeks and six weeks after the first injection. The second injection, if necessary, will take place after the analytical results from the first injection have been evaluated in determining the effectiveness of the injection strategy.

A. Estimated Costs

The costs associated with this removal action are estimated as follows:

Extramural Costs

Removal Costs	$240,821
Contingency (10%)	24,082
Removal Project Ceiling	$264,903

EPA direct and indirect costs although cost recoverable do not count toward the Removal Ceiling for this removal action. Refer to the enforcement action section for a breakout of these costs.

VI. EXPECTED CHANGE IN THE SITUATION SHOULD ACTION BE DELAYED OR NOT TAKEN

Delayed action will increase public health risks to the adjacent population through the increased possibility of hazardous substances being released from the soils via groundwater.

VII. OUTSTANDING POLICY ISSUES

There are no outstanding policy issues associated with this removal action. This proposed removal action is in accordance with the Superfund Accelerated Cleanup Model which encourages the expanded use of removal authorities to expeditiously eliminate immediate threats and to accelerate cleanup at NPL sites. The removal action is consistent with EPA's ongoing site-wide activities.

VIII. ENFORCEMENT

The total EPA costs for this removal action based on full cost-accounting practices are estimated to be $444,389. EPA direct and indirect costs, although cost recoverable, do not count toward the Removal Ceiling for this removal action.

A. Intramural Costs:

EPA Direct	$ 30,000
EPA Indirect	$149,486
Subtotal Intramural Costs	$179,486
TOTAL REMOVAL PROJECT COSTS	$444,389

Direct costs include direct extramural costs and direct intramural costs. Indirect costs are calculated based on an estimated indirect cost rate expressed as a percentage of site-specific direct costs consistent with the full cost-accounting methodology effective October 2, 2000. These estimates do not include pre-judgment interest, do not take into account other enforcement costs, including Department of Justice costs, and may be adjusted during the recourse of a removal action. The estimates are for illustrative purposes only and their use is not intended to create any rights for responsible parties. Neither the lack of a total cost estimate nor deviation of actual costs from this estimate will affect the United States' rights to cost recovery.

The Maiden Lane area of OU4 is part of the Riverfront NPL Site. EPA conducted a potentially responsible party (PRP) search and is currently treating OU4 as fund lead. No viable PRPs have yet been identified for this area. If viable PRPs are discovered in the future, EPA will seek to recover its costs for this work from those parties.

IX. RECOMMENDATION

This decision document represents the selected time-critical removal action for the Maiden Lane area of OU4 of the Site located in New Haven, Missouri, developed in accordance with CERCLA as amended and not inconsistent with the NCP. The decision is based upon the administrative record for the Site.

Conditions at this Site meet the criteria set forth at 40 C.F.R. § 300.415(b)(2) for a removal action. The total removal project ceiling is $264,903. This amount will be funded by the Regional Removal Allowance. I recommend your approval of the proposed action.

Cecilia Tapia
Director
Superfund Division

Date 2/22/07

Attachments (5)

Attachment 1

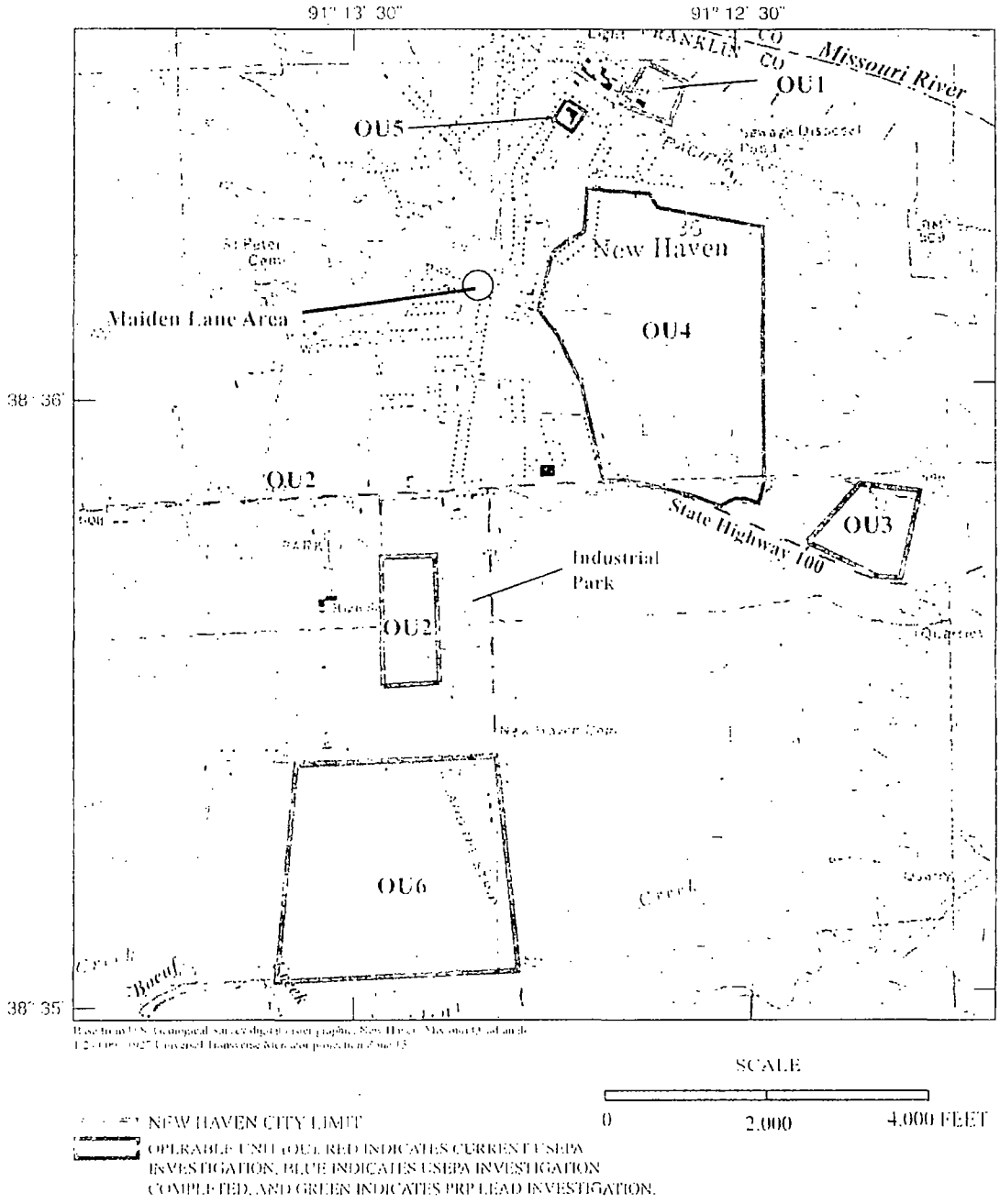

Figure 1 Topography in the New Haven Remedial Investigation (RI) study area and location of RI Operable Units (OUs).

Attachment 2

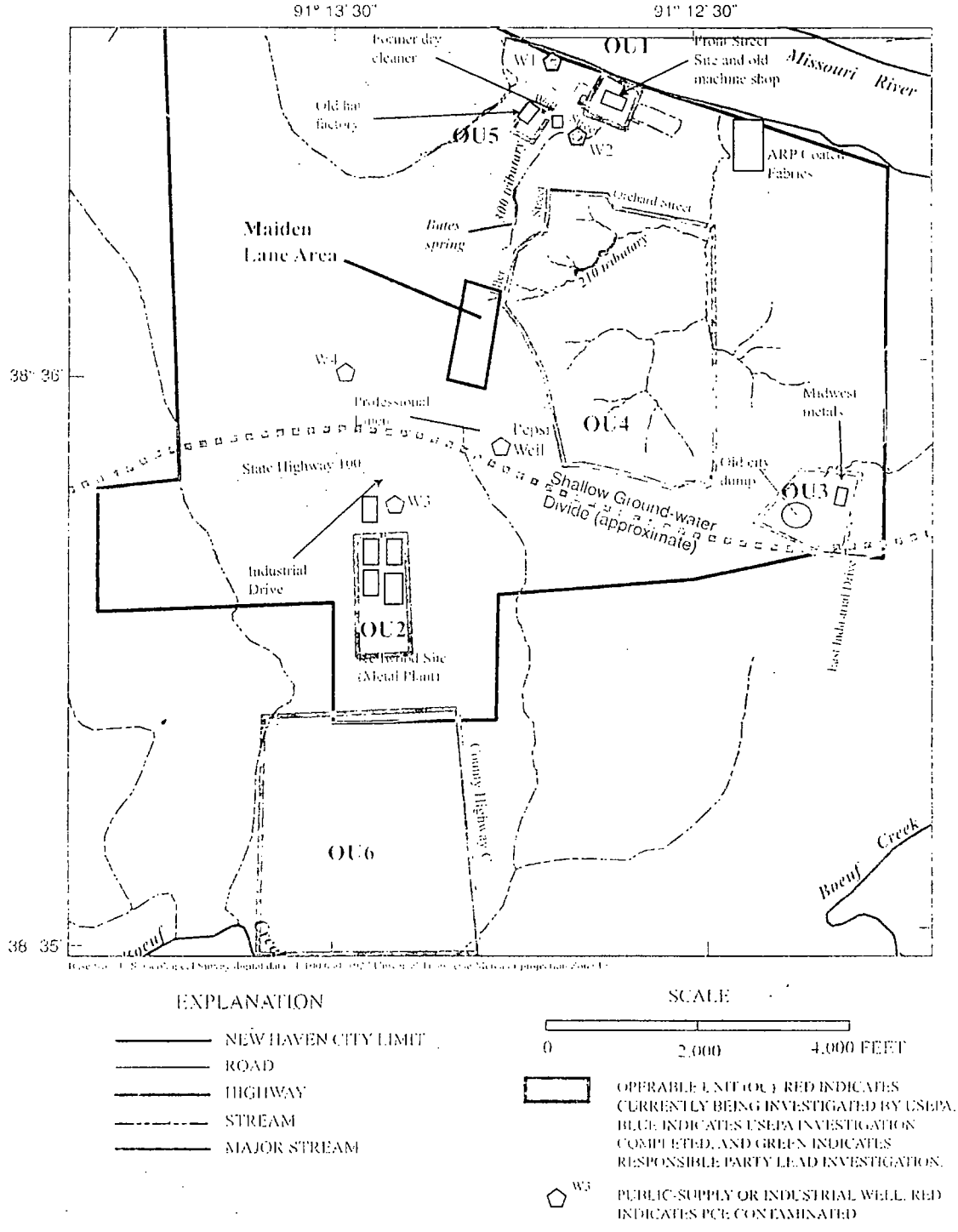

Figure 2 Location of contaminated public-supply wells (W1 and W2) and new, uncontaminated public-supply wells (W3 and W4) in New Haven, Missouri.

Attachment 3

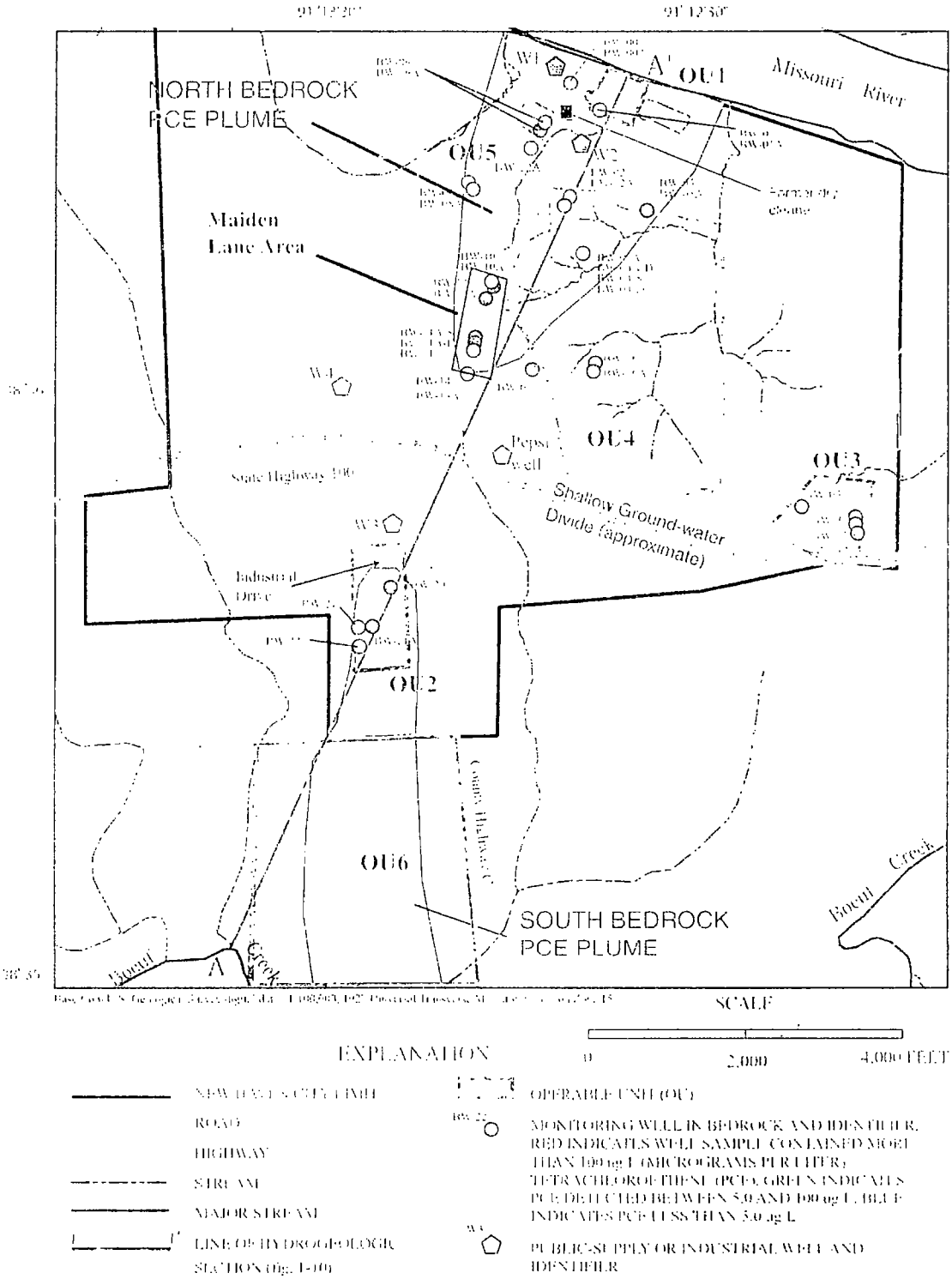

Figure 3 Location of U.S. Environmental Protection Agency (USEPA) monitoring wells in bedrock in New Haven, Missouri.

Attachment 4

Figure 4 Location and maximum PCE concentrations detected by the field GC in soil samples from borings along Maiden Lane and residential propoerties to the south. All concentrations in micrograms per kilogram.

Attachment 5

Figure 5 Maximum PCE in soils in the vicinity of the old green garage at 104 Maiden Lane. Also shown is the estimated extent of soils containing PCE greater than the region 9 residential soil PRG of 480 ug/kg.

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